

## **Black Box Defects**

Defect #	Defect	How to Correct the Defect	Module where defect is found	Severity(1-3)	Discovered in
1	Invaders go straight at the base, ignoring the path	in Update() create another condition to check if requested move is on the path	Enemies.java	3	BBT
2	Invaders did not turn at the first turn of the path	Map array is made incorrectly, does not match image path	Map.java	3	BBT
3	Character did not start on path and could only move in two directions until he was back on the path	Change player starting location to a valid spot	Player.java	3	BBT
4	Character intersected a tower. The game crashed	No code to check for a tower in the current path, just assumes that there isn't one.	Player.java	1	BBT
5	Tower could be placed on path	In method addTower() check to see if the desired location is on the path	Towers.java	2	BBT
6	Tower did not visibly shoot at invaders	Create a draw method for the action of towers shooting	Game.java	3	BBT
7	Tower was not placed where initially clicked	have a +1 on both the x and y coordinates during addtower()	Towers.java	3	BBT

8	Towers cannot be moved in the right or down direction when selected	change conditions to if(t.gridX != 0) for east and south	Towers.java	2	BBT
9	There is no way to start a new game	RestartGame() is an empty method	Game.java	3	BBT
10	There is no way to save a game	Not implemented at all, update product backlog or implement.	Game.java	3	BBT
11	Middle clicking a tower to upgrade it caused the tower to be deleted	Either fix the if condition before calling upgrade tower or rework upgrade tower	Towers.java	3	BBT
12	Character does not fire missiles when spacebar is pressed	change keyboard key variable to SPACE instead of the 'f' character	Player.java	2	BBT
13	Two towers can be selected at once which causes neither to move	add code in Update to unselect a previously selected tower before selecting a new one	Towers.java	3	BBT
14	Tower placed on path caused game to crash when invaders collided with it	Check to see if desired location for tower is on the path before placing	Towers.java	1	BBT
15	The attackers do not follow the entire path, they skip the first 3 turns.	Map array is made incorrectly, does not match image path	Map.java	2	BBT
16	Resources (spelled "reserses" in game) could reach negative points	Boost on medium difficulty is a negative value and needs to be positive	Game.java	2	BBT

17	Resources were not gained by killing invaders	in removeEnemy() do not set game score equal to itself but add the value of the enemy	Enemies.java	3	BBT
18	Wave count never visibly increased	current wave is never equal to next wave so the wave count is never updated on the gui	Game.java	3	BBT
19	There is no settings button	Add settings button to menu or remove from manual	Window.java	2	BBT
20	Waves do not appear to be sent unless the user sends them manually (documents indicate a timing function as well)	Update Manual or add to UpdateGame implementation for timed waves before wave.Update	Game.java	2	BBT
21	Can start a game without clicking any of the difficulty buttons	Remove the else condition that starts a new game if none of the difficulty buttons were pressed	Framework.java	2	BBT
22	Hovering over medium difficulty causes the mouseover effect of easy to activate	change what button is pressed to medium instead of easy	framework.java	2	BBT
23	Hard difficulty selected on mouseover and not on click	remove the menu bool assignment	framework.java	3	BBT
24	Starting health not consistent with manual	Either edit manual or initialization of player	Player.java	2	BBT
25	Starting resources of medium and hard are switched	Switch Medium and Hard around line 97	Game.java	3	BBT

26	Resources are not updated after placing towers	After placing tower deduct appropriate resources from player score	Towers.java	2	BBT
27	Health does not update	Repaint after subtracting enemy value from total score	Enemies.java	2	BBT
28	Character missiles have no cooldown and can be held as a continuous beam	No code to stop drawing of projectile	Player.java	2	BBT
29	Character missile/beam fires in the opposite direction in which it last moved	Projectile direction flipped backwards	Player.java	2	BBT
30	Key to fire for character is "f" not spacebar	Either update manual or change VS_KEY to 'space'	Player.java	3	BBT
31	At the end of each wave the amount of resources given is way too high and does not match up with the manual	Edit amount of resources given in UpdateGame() or edit the manual in	Game.java	2	BBT
32	If you place a tower in the path and then delete it the attackers still act as though there was something blocking them	In method removeTower() repaint gui.	Towers.java	2	BBT
33	You can't actually lose	Redo method for dealDamage() completely, enemies do damage to themselves	Enemies.java	2	BBT
34	The text "BAAAAAAAAAAM" appears on the screen	Remove this line	Game.java	3	BBT

	for an entire wave if you don't place any towers				
35	The character cannot travel over the entire path, the first turn is blocked off	Map array is made incorrectly, does not match image path	Map.java	2	BBT
36	It is possible to win by doing nothing	win = true should check to see if player is alive, also uncomment the line that sees if there are no enemies left	Game.java	2	BBT
37	By placing a tower on the path, clicking the map and then trying to move the tower it will duplicate the tower and prevent you from clicking the original	There needs to be a condition to prevent you from placing the tower on the path in the first place	Towers.java	2	BBT

### **White Box Defects**

Defect #	Defect	How to Correct the Defect	Module where defect is found	Severity(1-3)	Discovered in
1	On the 4th wave you only get 14 easy enemies. (marked with a comment saying it was a defect)	Get rid of code that was purposefully inserted for the defect.	Wave.java	1	WBT
2	If the current wave is 8 the system exits. This does not get executed due to a previous defect but is still a defect in the code	Get rid of the last else if in method inWave()	Wave.java	1	WBT
3	if "k" is equal to 2 the enemies speed is halved, this is not used	Remove if(k==2) condition in dealDamage()	Enemies.java	2	WBT

	anywhere in other modules				
4	When upgrading a tower the image is not upgraded to tower1up	change t.image=tower1; to t.image=tower1up;	Towers.java	3	WBT
5	Have pictures loaded for a second tower but never actually use them	Implement a second tower type or delete unused images	Towers.java	1	WBT
6	There is implementation for not moving a tower off the top of the map, but not for the other edges	Add checks when moving a tower in update() to check if the location to be moved is off the screen	Towers.java	1	WBT